

## CLAIMS

I claim:

1. A programmable, variable volume and pressure, coolant supply system comprising:

at least one fluid pressure transducer for monitoring coolant pressure;

a pump for providing coolant to at least one tool with at least one coolant orifice means, the orifice means having a flow area;

an electrical AC pump motor operatively connected to said pump;

a variable frequency drive electrically connected to said pump motor, said variable frequency drive providing AC power to said pump motor at various frequencies, to thereby control a speed of said pump motor; and

a computer, said computer monitoring the coolant pressure via said at least one fluid pressure transducer and being programmed with data related to the flow area of the orifice means; and wherein

said computer determines a desired speed of said pump motor based on the coolant pressure and the flow area of the orifice means of the tool;

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21        said computer controlling the variable frequency drive to  
22 provide said pump motor with AC power at a frequency that results  
23 in said pump motor running at the desired speed.

1        2. The coolant supply system as defined in claim 1, further  
2 comprising a coolant supply line, said coolant supply line  
3 extending between said pump outlet and the orifice means, to supply  
4 said coolant under pressure to the orifice means.

1        3. The coolant supply system as defined in claim 2, further  
2 comprising a coolant return line, said coolant return line  
3 extending between the tool and said pump inlet, for returning said  
4 coolant to said pump inlet after said coolant exits the orifice  
5 means.

1        4. The coolant supply system as defined in claim 3, further  
2 comprising a coolant reservoir in said coolant return line.

1        5. The coolant supply system as defined in claim 4, further  
2 comprising a coolant catch pan between the tool and said coolant  
3 return line, said coolant catch pan receiving said coolant exiting  
4 the orifice means and directing it into said coolant return line.

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1           6. The coolant supply system as defined in claim 5, further  
2 comprising a coolant filter in said catch pan, to remove impurities  
3 from said coolant exiting the orifice means prior to directing said  
4 coolant into said coolant return line.

1           7. A fluid cooled, cutting tool system comprising at least  
2 one cutting tool having a coolant orifice means with a flow area  
3 for applying a coolant to said at least one tool, and a  
4 programmable, variable volume and pressure, coolant supply system,  
5 said coolant supply system comprising:

6           at least one fluid pressure transducer for monitoring the  
7 pressure of said coolant;

8           a pump having an inlet and an outlet, for providing  
9 pressurized coolant to said coolant orifice means;

10          an electrical AC pump motor operatively connected to said  
11 pump;

12          a variable frequency drive electrically connected to said pump  
13 motor, said variable frequency drive providing AC power to said  
14 pump motor at various frequencies, to thereby control a speed of  
15 said pump motor; and

16          a computer, said computer monitoring said coolant pressure via  
17 said at least one pressure transducer, and being programmed with  
18 data related to said flow area of said coolant orifice means; and  
19 wherein

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20 said computer determines a desired speed of said pump motor  
21 based on said coolant pressure and said flow area of said orifice  
22 means;

23 said computer controlling said variable frequency drive to  
24 provide said pump motor with AC power at a frequency that results  
25 in said pump motor running at said desired speed.

1 8. The fluid cooled, cutting tool system as defined in claim  
2 7, wherein:

3 said coolant orifice means includes a plurality of orifices;  
4 said flow area is a total flow area of said plurality of  
5 orifices; and

6 said computer determines said desired speed of said pump motor  
7 based on said coolant pressure and said total flow area of the  
8 plurality of orifices.

1 9. The fluid cooled, cutting tool system as defined in claim  
2 8, further comprising a coolant supply line, said coolant supply  
3 line extending between said pump outlet and said orifice means, to  
4 supply said coolant under pressure to said orifice means.

1 10. The fluid cooled, cutting tool system as defined in claim  
2 9, further comprising a coolant return line, said coolant return  
3 line extending between said at least one tool and said pump inlet,  
4 for returning said coolant to said pump inlet after said coolant  
5 exits said orifice means.

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